Claims:

1. Catalyst / catalyst carrier with an aluminium content of less than 0.3 % by weight obtainable from mainly layer-lattice silicates which contain aluminium by a dealuminating process.

2. Catalyst / catalyst carrier according to claim 1, wherein the said catalyst / catalyst carrier has an aluminium content of less than 0.03 % by weight.

3. Catalyst / catalyst carrier according to one of the proceeding claims, wherein said layer-lattice silicates used are smectite and / or have preferably montmorillonite structures.

4. Catalyst / catalyst carrier according to one of the proceeding claims, wherein said catalyst carrier has a cumulative pore volume of between 0.2 and 0.9 ml/g.

5. Catalyst / catalyst carrier according to one of the proceeding claims, wherein said catalyst / catalyst carrier has a total pore volume of between 0.6 and 0.7 ml/g.

6. Catalyst / catalyst carrier according to one of the proceeding claims, wherein said catalyst / catalyst carrier has the shape of a spherical body.

7. Catalyst / catalyst carrier according to one of the proceeding claims, wherein said catalyst / catalyst carrier has the shape of a ball.

8. Catalyst / catalyst carrier according to one of the proceeding claims, wherein said catalyst / catalyst carrier has a diameter of between 1 and 10 mm.

9. Catalyst / catalyst carrier according to one of the proceeding claims, wherein said catalyst / catalyst carrier has a diameter of between 4 and 6 mm.

10. Catalyst / catalyst carrier according to one of the proceeding claims, wherein said catalyst / catalyst carrier has a pressure resistance of at least 10 N/mm.

11. Catalyst / catalyst carrier according to one of the proceeding claims, wherein said catalyst / catalyst carrier has a pressure resistance of at least 20 N/mm.

12. Catalyst / catalyst carrier according to one of the proceeding claims, wherein said catalyst / catalyst carrier obtainable from lattice-layer silicates containing aluminium by carrying out the following steps:

- impregnating with an acid
- treating hydrothermally
- washing with an acidic, a basic or a neutral solution
- as well as optionally rinsing with water.

13. Catalyst / catalyst carrier according to claim 12, wherein said step

- of impregnating with an acid comprises impregnating with a mineral acid, in particular with phosphoric acid.

14. Catalyst / catalyst carrier according to one of the claims 12 to 13, wherein said step

- of hydrothermal treatment takes place at a temperature of between 160 and 300 °C and/or at an partial water vapour pressure of between 4 and 80 bar_{abs}..

15. Catalyst / catalyst carrier according to one of the claims 12 to 14, wherein said step

- of hydrothermal treatment takes place at a temperature of between 220 and 260 °C and / or at an partial water vapour pressure of between 16 and 25 bar_{abs}..

16. Catalyst / catalyst carrier according to one of the claims 12 to 15, wherein said step

- of hydrothermal treatment takes place completely or in part during the use of said catalyst / catalyst carrier in a hydration reaction.

17. Catalyst / catalyst carrier according to one of the claims 12 to 16, wherein said step

- of washing takes place at a temperature of between 20 and 100 °C.

18. Catalyst / catalyst carrier according to one of the claims 12 to 17, wherein said step

- of washing takes place at a temperature of between 70 and 90 °C.

19. Catalyst / catalyst carrier according to one of the claims 12 to 18, wherein said step

- of washing takes place with water, with hydrochloric acid or with water containing 0 to 30 parts of concentrated hydrochloric acid.

20. Catalyst / catalyst carrier according to one of the claims 12 to 19, wherein said step

- of rinsing takes place until the washing water becomes neutral.

21. Process for producing a catalyst / catalyst carrier according to one of the claims 1 to 11 by a process which comprises the steps according to the claims 12 to 20.

22. Process according to claim 21, wherein the catalyst / catalyst carrier is purified by burning off adhering organic carbon-containing compounds at a

temperature of between 300 and 1,000 °C, before the steps according to one of the claims 12 to 20 are applied.

23. Process of hydration of olefins, preferably C_2 or C_3 olefins, with water in the presence of at least one catalyst, which is made from a catalyst/catalyst carrier according to one of the claims 1 to 20 impregnated with acid.

24. Process according to claim 23, wherein the hydration reaction

- is carried out in a reactor
- an olefin to water molar ratio is adjusted to between 0.1 and 0.8 in the reactor
- has a gas hourly space velocity of 10 to 100 $l_n/min/l_{cat}$
- said catalyst contains 5 to 60 % by weight of acid, and
- the hydration reaction of the olefins is carried out at a temperature of between 160 and 300 °C and an pressure of between 20 and 200 $bar_{absolute}$

25. Process according to one of the claims 23 to 24, wherein said acid with which the catalyst / catalyst carrier is impregnated is a 10 to 90 % by weight phosphoric acid.

26. Process according to claim 25, wherein said acid with which the catalyst / catalyst carrier is im-

pregnated is a 50 to 60 % by weight phosphoric acid.

27. Process according to one of the claims 23 to 26, wherein said catalyst contains 5 to 60 % of an acid, calculated as pure acid, in particular a mineral acid like phosphoric acid.

28. Process according to one of the claims 23 to 27, wherein the hydration reaction for producing ethanol from ethene is carried out at a temperature of between 220 and 260 °C and a pressure of between 60 and 80 bar.

29. Process according to one of the claims 23 to 28, wherein the olefin used and the water used are introduced into the reactor in gaseous form.

30. Process according to one of the claims 23 to 29, wherein said acid is introduced into the reactor during the course of the hydration reaction.

31. Process according to claim 30, wherein said acid used is phosphoric acid.

32. Process according to at least one of the claims 23 to 31, wherein said acid is injected into the reactor continuously.

33. Catalyst for the hydration of olefins to alcohols obtainable by bringing into contact the catalyst / catalyst carrier according to one of the claims 1 to 20 and the catalyst / catalyst carrier produced according to one of the claims 21 to 22 with a mineral acid, in particular phosphoric acid, respectively.

34. Catalyst for the hydration of olefins to alcohols according to claim 33 which contains 5 to 60 % by weight acid, calculated as pure acid.

35. Catalyst / catalyst carrier according to one of the claims 1 to 20, wherein the said catalyst / catalyst carrier has at least partly a cristobalite-like structure.

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